Satakunnan ammattikorkeakoulu
Satakunta University of Applied Sciences

ADENIRAN CLEMENT ONI
MENGHUA LIANG

Taking high-quality intravenous blood samples

Educational PowerPoint slides for nursing students

DEGREE PROGRAMME IN NURSING
2021

Authors
Oni, Adeniran Clement
Liang, Menghua

Bachelor's thesis

Date
October 2021

Number of pages
23+ 4 APPENDICES

Language of publication:
English

Title of publication
Taking High-quality Intravenous Blood Samples: Educational PowerPoint slides for nursing students

Degree Programme in Nursing

Abstract

Venepuncture is a skill that is important for nurses and nursing students to possess. In medicine, there is a massive reliance on testing to help healthcare practitioners with patient handling, making, or excluding diagnosis and executing an appropriate treatment plan.

This thesis has a product that makes it a functional thesis. The purpose of this thesis was to produce an aiding educational material in a PowerPoint presentation format for English language speaking nursing students on the right method of collecting high-quality intravenous blood samples from adults. The objective of this project was that by using the product of this project, a student should be familiar with the procedure of sample collection in a safe and appropriate manner. The authors learn in the process of the project how to create effective teaching materials and deepen their knowledge of the topic and gain adequate research skills.

The product is in the form of PowerPoint slides, which incorporates videos and pictures for illustrative purpose. The PowerPoint slides describe the step-by-step procedure of sample collection from an adult. Corrections made through feedbacks were implemented to the product to improve the quality.

Agile project method was used in this project, the method allowed for the constant collaboration between subscriber and authors that was needed in this project. This enabled the authors to get separate and constant feedback for the product to achieve a good quality. The project was carried out in three parts, the planning phase, the implementation phase, and evaluation phase.

The information presented in the thesis was sourced from reliable sources and general recommendations. This thesis and its product have been written to satisfy the requirements of the studies at SAMK and the product has been well evaluated by the supervisors and lecturers in charge of the thesis.

Keywords
Venepuncture, Blood sample collection, Patient safety, Asepsis, PowerPoint as an educational material

CONTENTS

1 INTRODUCTION

Blood sample collection is a skill that is important for nurses and nursing students to have. In medicine, there is a reliance on diagnostic testing to aid healthcare practitioners with patient handling, deciding, or excluding diagnosis and executing a proper treatment plan. (Sareen & Dutt, 2018.) Pre-analytics and sampling of blood are key parts of a valid study result. Irregular sample collection may cause changes in the test constituent, which may distort the result up to 40 per cent, it is therefore imperative that Nurses and student nurses who are usually involved in the sampling pre-analytic phase learn the right techniques of sample collection. (Koskinen, 2015.) Even though many healthcare facilities have teams responsible for blood sample collection, it may sometimes fall to the nurse to collect immediate samples when needed. In most cases prompt collection which aids analysis can save a patient's life. (Herrera, 2020.)

The purpose of this thesis was to produce an aiding educational material in a PowerPoint presentation format for English language speaking nursing students on the right method of collecting high-quality intravenous blood samples from adults. The objective of this project was that by using the product of this project, a student should be familiar with the procedure of sample collection in a safe and appropriate manner. The authors learn in the process of the project how to create effective teaching materials and deepen their knowledge of the topic and gain adequate research skills.

The product is aimed at nursing students at Satakunta University of Applied Sciences (SAMK) to apply in their clinical training and to assist teachers in lectures or simulations. SAMK is a higher institution with many departments that include Health and Welfare, Logistics and Maritime technology, Service business and Technology. The main campus is in Pori in the Satakunta region of Finland. (Satakunta University of Applied Sciences, 2020.)

2 THEORETICAL BACKGROUND

Key concepts are the main idea in research, key concepts are identified by defining the topic (University of Jyväskylä, 2018). The concepts used in this project are derived from getting related terms to the topic. Some of the concepts have sub-concepts that are explained to provide a clear definition of the main concept. The main concepts are blood, vein, venepuncture, and blood sampling. The sub-concepts provide more details about terms that may seem confusing when reading the main concepts and some important mentions.

2.1 Blood

The blood is a continually moving fluid within the body, providing the various body components with nutrition, oxygen, and waste removal (Hoffman, 2021). It transports hormones to allow various parts of the body to communicate (Sarode, 2021). Also, it carries components that fight infection and stop bleeding (Hoffman, 2021). An adult will have about 4.5 litres – 5.7 litres of blood in their body, the blood makes up about 10% of an adult's weight (Sullivan, 2017). After being pumped by the heart, blood takes about 20-30 seconds to circulate the body and return to the heart. The blood itself is made up various components: plasma, red blood cells, white blood cells and platelets. (Goodwin, 2021.) Blood cells are mostly created in the bone marrow, Within the bone marrow, all blood cells come from a stem cell. When a stem cell splits, it becomes an immature red blood cell, white blood cell, or platelet-producing cell. The cell then divides, develops further, and finally becomes a mature red blood cell, white blood cell, or platelet. (Sarode, 2021.) Blood cells are constantly replenished in the body.

The Plasma (the liquid component of the blood) makes up about 55% of the blood. The other components of the blood are suspended in the plasma. It makes up more than half of the blood's volume and consists largely of water that contains dissolved electrolytes and proteins. The major protein in plasma is albumin. Other proteins in plasma include antibodies, which guard the body against viruses, bacteria, fungi, and

cancer cells, and clotting factors, which control bleeding. (Website of Hematology, 2020.)

Red blood cells (RBC) make up most of the cells in the blood. They are responsible for the bright red colour of the blood. RBC production is controlled by a hormone produced by the kidney called “erythropoietin”. (Robinson, 2020.) Haemoglobins are the oxygen-carrying pigments of the body, they are bundled into RBCs in quantities sufficient to transport enough oxygen from the lungs to the tissues to meet the needs of those cells. (Silberstaein et al, 2017, p. 449.)

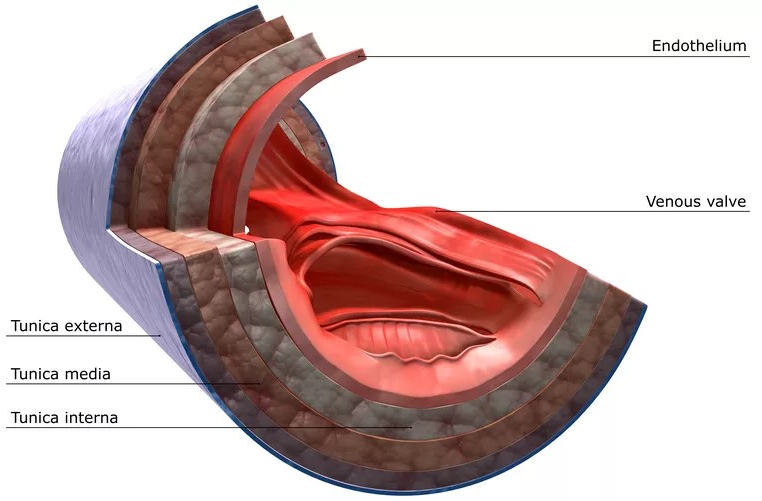
White blood cells (WBC) are very important part of the body’s defence against infectious organisms and foreign substances. These cells are divided into five types which are then classified into two groups: Granulocytes (Neutrophils, Eosinophils, Basophils) and Agranulocytes (Lymphocytes, Monocytes). Some white blood cells move through the bloodstream, but many stick to blood vessel walls or even probe the vessel walls to enter other tissues. A higher-than-normal number of white blood cells will likely be an indication of an underlying disorder such as an infection, inflammatory process. (Sarode, 2021.)

Platelets are small cells that are derived from the bone marrow. Platelets circulate in the blood, sense damage to a blood vessel and gather at these sites, where they initiate coagulation. They serve as plugs to bleeding sites. (Williams, 2021.)

2.2 Vein

A vein is defined as a vessel that conducts blood from the periphery to the heart (Vaskovic, 2021). All veins carry deoxygenated blood excluding the pulmonary vein. Venous blood is darker because of the low content of oxygen. The blood transported in the veins has delivered oxygen, nutrients, and electrolytes to the cells, and collects wastes for removal. This is the specimen of blood obtained when venepuncture is performed and is the blood that supplementary fluid and medications are added too when a cannula is inserted into a vein. (Philips et al., 2011.) Veins have thinner walls than arteries, are much more in quantity than arteries and collect blood from

capillaries. The vein is composed of three layers: intima, media, adventitia. The vein has one-way valves to prevent backwards flow of blood. (Christensen & Lewis, 2014.) The Adventitia layer is the strong outer cover of the vein, and it is made up of connective tissue and elastic fibres which allow it to stretch to accommodate pressure of blood flow. The media layer consist of smooth elastic fibres and the Intima is the inner layer of veins with smooth endothelium, this layer contains valves to keep blood flowing in a single direction. (Bailey, 2021.) Damage can be done to the endothelia cells of the vein during venepuncture due to: Inadequate skin preparation, inappropriate choice of vein and poor asepsis which might allow contamination (Philips et al., 2011). Picture 1 below shows a structure of the vein.



Picture 1. Layers of the vein (Bailey, 2021).

Veins in the body are classified based on their location and features or function. According to function veins are either Pulmonary or systemic veins. Pulmonary veins are special because they are the only veins that carry oxygenated blood from the lungs to the heart. Systemic veins carry blood with used-up oxygen to the heart from the rest of the body, most veins are in this category. (Schulman & Luo, 2018.)

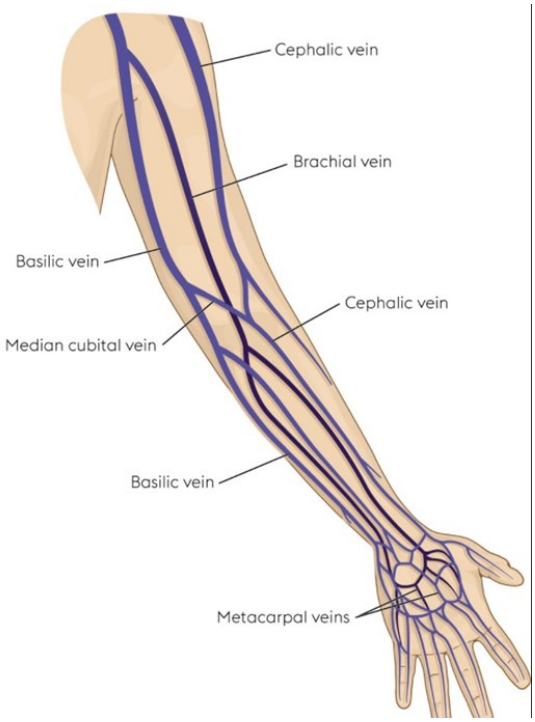
Systemic veins can further be classified as Deep, Superficial and Connecting veins. Deep veins are found in the muscles or with bones, muscles compress the deep veins to keep blood moving forward. Deep veins usually accompany arteries and have the same names as the corresponding arteries. As these veins can be close to arteries and nerves care must be taken when dealing with them. (Philips et al., 2011.) Superficial veins are just below the skin and return blood from the skin and subcutaneous regions

to the deep veins. The connecting veins conduct blood to the deep veins from the superficial veins. (Schulman & Luo, 2018.)

2.3 Venepuncture and Blood sampling

Blood sampling is a common intervention. Drawing blood for testing is required for most patients in hospitals for purposes like diagnosis and for current treatment. (Davies et al., 2020.) According to a study in 2016 conducted over seven days at an Australian hospital, about 940 blood sampling incidents were recorded from 96 patients (Ullman et al., 2016). Access to blood is allowed through venepuncture by using a straight needle, vacutainer or syringe and collection tubes (Davies et al., 2020). Venepuncture is an invasive procedure that can be painful for patients and in some cases cause trauma at the access site. Difficulty in accessing sites for venepuncture can cause dangerous delays in treatments. (Buowari, 2013.) Indication for blood sampling is the need for venous blood sample for laboratory study (Liu & Geffen, 2020). In most cases the amount of blood collected is between 10-20 ml, this loss of blood should not be felt by an adult. Usually, blood measurements are now made from plasma whereas in the past, blood serum was used in laboratory studies. The blood component to be studied is indicated by the first letter of the abbreviation of the test. **B** means whole blood, **E** for red blood cells, **P** for plasma, **S** for serum and **f** (in lower case) means that a fasting sample is needed. (Eskelinen, 2016.)

An order for a laboratory test is sent in advance by a Nurse or a Doctor and based on this the sample collector selects the appropriate tubes. A superficial vein most used for venepuncture. (Buowari, 2013.) The best sites for venepuncture are the veins in the antecubital fossa: the Cephalic, Basilic, and Median Cubital. Caution should be taken when accessing the medial cubital vein as it goes over the brachial artery and radial nerve. A good vein will feel bouncy and will refill after pressure is applied. (Shaw, 2018.) Other veins in the arm like the metacarpal veins may also be used, however these veins can be difficult to anchor. Picture 2. Shows the location of the veins.



Picture 2. Recommended veins for venous blood sampling (Shaw, 2018).

Inappropriate sites for venepuncture include oedematous areas, haematomas, arms in which blood is being transfused, scarred areas, arms with fistulas or vascular grafts and sites above an intravenous cannular. Serious complications can occur because of venepuncture even when only a small volume of blood is withdrawn. (Buowari, 2013.)

As stated in the law regarding patients' rights, the decision to be present and consent to a medical procedure which includes venepuncture resides solely on the patients. If the patient refuses the procedure, then they should be treated in a medically acceptable manner. (Act on the law regarding the status and rights of a patient 8/17/1992/785, section 6.)

2.4 Taking high-quality intravenous blood sample

2.4.1 Safety

As with all health procedures, safety is an important aspect of intravenous blood collection. It is important for preventing laboratory error, patient injury and professional injury that safe procedures are followed. In the accessing phase the use of a finger to detect vein location may increase the chance of contamination. Incorrect patient identification may lead to collection from a wrong patient which can greatly disrupt care process and lead to trauma. Patient education should be provided as this can make the patient more relaxed. (World Health Organization, 2010). Blood should be collected in a special space and in a comfortable position. To reduce contamination risk, the environment should be made as clean as possible (Shaw, 2018).

2.4.2 Asepsis

There is a risk of direct introduction of pathogens into a patient's bloodstream during the collection of blood, hand hygiene prior to the procedure is the single most effective way to minimise the risk of transmission of microorganisms. (NHMRC, 2019.) To prevent infections and other adverse events, guidelines on Asepsis, use of gloves, skin disinfection, use of appropriate blood-sampling devices and safe transportation of laboratory samples should be followed during venepuncture. Asepsis is a state in which no living disease-causing microorganisms are present, it covers all the procedures designed to reduce the risk of bacterial, fungal, or viral contamination such as: using sterile instruments, sterile draping and the gloved 'no touch' technique. Techniques may be applied to eliminate contamination present on objects and the skin by means of sterilization and disinfection. (Dockery, 2012.) The fundamental principle of asepsis is to prevent sepsis. Sepsis is defined as a toxic condition resulting from the multiplication of pathogenic bacteria and their products, or as a state of poisoning of tissues, or the bloodstream, carried by bacteria. (Gould et al., 2020.)

Aseptic technique is used to support procedures such as venipuncture, cannulation, insertion of urinary catheters, blood cultures, wound dressings, and administration of intravenous drugs. Nurses are the professional group with long continuous patient contact and undertake a lot of procedures. It is well expected that all health professionals understand the aim and importance of Asepsis. (Gould et al., 2020.) The aim of any aseptic technique used is to prevent the spread of infection to patients', by direct or indirect means.

Hand hygiene is a very important way of breaking chain of infections, it is done through hand washing or using antiseptic hand wash. During hand washing, friction is used to mechanically remove microorganisms. Antiseptic hand rubs eliminate microorganisms, it is important that the hand rub is spread on all surface of the hand. The WHO suggests health workers to perform hand hygiene before and after touching patient and patient's surroundings, after exposure to fluids, and before and after performing aseptic procedures. (WHO, 2009.)

2.4.3 Patient Guidance in blood Sampling

Patient education is a process of influencing patient behaviour and producing the changes in knowledge, attitudes, and skills necessary to maintain or improve health. Preparation affects the interpretation and reliability of test results. A patient should be asked if they have adhered to the pre-sampling instructions. (Fimlab, 2021.) In the pre-sampling phase, patient guidance includes instruction about whether the patient could eat before sampling or not and a list of materials that are not recommended to be taken. For a fasting sample the patient should be without food, smoking, and drinking for about 10 hours, a cup of water may be taken in the morning. If a fasting blood sample is not required, then the patient can eat and drink normally without taking alcohol. (SataDiag, 2016.) Medicines can be taken normally on the morning of the procedure, unless the level of that medicine in the blood is being checked (in which case the morning medicine is taken after a blood sample) (Fimlab, 2021).

During sampling, the patient should be instructed to keep still as moving around may cause needle injuries to the patient and the healthcare worker. The procedure should

not be very painful, patients anticipating pain may increase injury risk. To reduce this risk patient should be made to relax. (NHS, 2013.) Patient Guidance post-sampling involves instructing the patient to apply pressure on the site and if the patient is not able to, a skin friendly tape with gauze is applied to help stop bleeding. (WHO, 2009).

2.4.4 Quality of blood sample

Each step in the process of venepuncture affects the quality of the specimen (World Health Organization, 2010). Majority of errors that happen in sample analysis are because of poor handling and procedures in the preanalytical phase. Most importantly, the collection of inappropriate specimens for testing (either due to inappropriate volume or quality) is by far the most frequent source of all laboratory errors. (Lippi et al., 2019.) There are many errors that may reduce the quality of blood samples, these include undue clotting due to blood not being mixed thoroughly with the anticoagulant or preservative in the tube (Condon, 2021). A sample could also be haemolysed, haemolysis happens when red blood cells bursts. Haemolysis is the second most common reason for rejected samples, it can be avoided by using approved steps in collection. (Website of Phlebotomy, 2021.) Insufficient sample volume is the most common cause of error, this can easily be solved by filling up sample tubes to the marked area. Drawing blood in the correct tube will help prevent subjecting patients to repeated procedures. (Lippi et al., 2019.)

2.4.5 Complications

Complications that arise during venepuncture include hematoma formation, infection, syncope, nerve damage, and excessive bleeding. The most common complication of venepuncture is hematoma formation, this occurs because of bleeding into the tissues during or after the procedure. In most cases the bruising is because the patch placed on the site has not been pressed correctly or sufficiently. Patients should be advised to apply pressure to the site for several minutes and to avoid using the hand for heavy work during the next hour. (Eskelinen, 2016.) To reduce the risk of the patient fainting during the procedure, support means should be provided, asking the patients about

relevant previous experiences may help to avoid problems. Nerve damage is uncommon but is a potentially serious complication, the patient may feel a tingling if a nerve is hit, excessive needle repositioning may also cause damage. In this case discontinue the procedure, assess, and provide support to the patient as needed. (Buowari, 2013.)

2.4.6 Procedure for taking intravenous blood sample

The widely used recommendations for sample collection is the one Published by the WHO in 2010. The European Federation of Clinical Chemistry and Laboratory Medicine (EFLM) in the recommendation published in 2017 which combined guidelines from many European countries and did research to select the best practices of these guidelines divided the procedure into some parts: The Pre-sampling, Sampling, and post-sampling parts. (Simundic et al., 2018.) Satadiag which is the institution that provides diagnostic pharmaceutical and care services in Satakunta which the subscribing customer of this project is located also have a sample collection instruction published (Satadiag, 2013). The steps for the procedure presented in this project will classify the processes involved under the previously mentioned headings using the Finnish, WHO and EFLM recommendations.

The pre-sampling phase involves patient preparation which in some cases should have started before the patient arrived for the test. In case where Fasting blood sample is required the patient should have been given instructions before arriving for collection. Before approaching the patient for collection, the equipment needed for the procedure should be collected and placed within easy reach on a trolley or safe accessible surface. Equipment for sample collection include non-sterile gloves, Torniquet, Sample tubes, Vacuum extraction tubes, Alcohol swabs for disinfection, Specimen labels, Alcohol hand disinfectant, sharps container, and Gauze or cotton to be applied over puncture site. (World Health Organization, 2010.) Tubes should be checked before collection to ensure they are not expired as this can alter the results. Blood samples are usually taken aseptically by vacuum technique, the most recommended needle size is 21 G, a smaller

needle diameter can cause breakdown of red blood cells (Haemolysis). (Satadiag, 2013.) Picture 3. Below shows a vacuum needle with holder and a vacuum sample tube

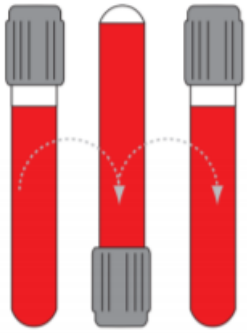
Picture 3. vacuum needle with holder (left) and a vacuum sample tube (right)

For accuracy a patient can be advised to avoid stress before sample collection, physical exertion affects the test results either by causing fluid loss through sweating or as a volume change between intravenous and interstitial space (Satadiag, 2013). After appropriate identification which in case of admitted patients can be done by scanning name tag and asking the patient directly for their social security number, the collector may use interviewing type questions to determine if the patient has observed pre-sampling instructions by asking questions like. “When was the last time you ate, took alcohol” and relevant questions depending on the sample to collected. (Sepänniemi et al., 2018.) Asking the patient for previous experience may help identify patients who are at risk for complications during collection (Simundic et al., 2018). Tube labelling should be done after patient identification, if possible, to prevent incorrect labelling.

Sampling starts with site selection. Perform hand hygiene before touching the patients. Extend the patients arm and inspect the antecubital fossa or forearm, do this without a glove (if possible) to have a better assessment, apply a torniquet and palpate to locate a suitable vein. (Liu & Geffen, 2020.) Unnecessary use of stasis should be avoided, the maximum time recommended is 60 seconds (Satadiag, 2013). If there is a need to reapply the torniquet, then an interval of 2 minutes should be observed to allow for return to blood flow (Wilde et al., 2013). Needles should not be inserted where veins are diverting! The torniquet can be applied about7-10 cm above the collection site. (World Health Organization, 2010.)

Perform hand hygiene, if the hands are not visibly contaminated the use of alcohol rub is sufficient. Put on Gloves after this step. Disinfect the entry using skin appropriate alcohol swabs in a smooth downwards motion to prevent recontamination, allow the area to dry. If the site is touched, the disinfection should be repeated. (Sepänniemi et al., 2018.) Puncture the vein with the needle bevel side up. Prevent the vein form rolling by extending the skin. An angle of 5-30 degrees is recommended depending on vein depth with at least one-quarter of the needle inserted into the vein. If a vein cannot be located, reposition the needle and do not reinsert a used needle. Blood in the flash chamber may indicate that there is entry into a vein. (Simundic et al., 2018.)

All sample tubes should be filled up to the required mark and should be taken in the right order to avoid cross-contamination of additives which may influence test results. The tubes should be inverted gently at least 8 times after sampling without shaking. (World Health Organization, 2010.) The torniquet should be removed immediately blood flows into the first tube (Simundic et al., 2018). Picture 4. shows the inversion direction for sample tubes.



Picture 4. Inversion direction for sample tube (Simundic et al., 2018).

After the last tube, place a gauze pad on the site and gently remove the needle while avoiding causing injury to the collector and the patient. Pressure should then be applied immediately to avoid bleeding. Engage the needle safety and dispose of the needle is a sharp container. Perform hand hygiene. (World Health Organization, 2010.)

In post-sampling, sample labels should be rechecked, and appropriate patient instructions given, including checking the patients' physical state. Sample should be transported according to institutional instructions. The sampling surface should be

cleaned and if a reusable torniquet was used then it should be disinfected properly before the next use. (World Health Organization, 2010.) Adequate documentation should be done.

2.5 PowerPoint as an educational material

PowerPoint is a presentation software that provides an avenue to produce professional looking presentation. It offers outlining, drawing graphing and presentation tools. (Website of Microsoft, 2021.) Appropriate use of PowerPoint can augment teaching and learning experience. It facilitates the structuring of a presentation in a professional format. A presentation can be made engaging using media attachments. PowerPoint has a large advantage because it requires less technical knowledge to use due to its simplicity. (Hashemi et al., 2012.)

PowerPoint employs the use of Templates, which are available in downloadable formats or can be easily made according to user preference. Evidence has been presented that prove PowerPoint improves learning, raises audience interest, and helps in explanation of complex illustrations. In the rise of distance learning PowerPoint has been an invaluable tool. There have also risen concerns about PowerPoint dividing the interest of the students between listening to the presenter and the watching the presentation. (Pros et al., 2013.) To keep the PowerPoint with the standards required by SAMK, the slides will made according to the provided SAMK PowerPoint template.

3 PURPOSE AND OBJECTIVES OF THE PROJECT

The purpose of this thesis was to produce an aiding educational material in a PowerPoint presentation format for English language speaking nursing students on the right method of collecting high-quality intravenous blood samples from adults. The objective of this project was that by using the product of this project, a student should

be familiar with the procedure of sample collection in a safe and appropriate manner to use in clinical training. The authors learn in the process of the project how to create effective teaching materials, deepen their knowledge of the topic, and gain adequate research skills.

4 PROJECT IMPLEMENTATION

4.1 Project methodology

This project employs the Agile project management method. Agile project management is an approach to delivering a project throughout its life cycle, it involves breaking the project aim into smaller portions which are then delivered and evaluated through a constant feedback system with the customer or the subscriber to a project (Sue, 2017). The method promotes open communication and collaboration. It gives the ability to adjust during each phase of the project according to received feedback which makes the method different from linear project management which follow a rigid path. (Radigan, 2021.)

This method was chosen for this project due its flexibility. The authors wanted a project method that will allow for easy manoeuvrability which allows for different phases of the project to be completed in orders which the authors deem fit. The method also allows for different parts of the project to be evaluated; this is particularly advantageous as the feedback gotten from the supervisor in submitted chapters can be used to make amendments to the current chapter thereby eliminating the risk of repeated mistakes.

4.2 Literature retrieval and theoretical Background

The information provided in this project is sourced from published articles found on databases such as Science direct, Tervesportti, Google Scholar, Pubmed and SAMK

Finna. Some of the articles used are behind paywalls, access to these articles were granted through SAMK Finna service. Many of the references used in this work are found through other works, the authors adhered to using original sources when possible so in instances where a book has referred another source the original source is used except where the research has been updated in the new source. Browsing through the reference list of the books used also provided links to materials. Care was taking to ensure no outdated source was used, due to these searches performed were limited from 2010-2021. The exemption to this search criteria was made with Guidelines published by the World Health Organization; this is because most of the articles relevant to this project were derived from these guidelines, so the authors decided to use the original guidelines. Later, at the suggestion of the supervisors more Finnish research materials were used. The table in Appendix 1 provides a brief outline of some articles used in the project.

Due to the vast amount of information that needed to be processed, the theoretical background was the first part of the project to be sent for feedback. After corrections were made, the information gathered is then used to develop the educational material.

4.3 PowerPoint Manuscript

After gathering the information to be used in making the PowerPoint presentation, the manuscript for the PowerPoint (Appendix 2) that is used to prepare the Slides (Appendix 3) was presented to the lecturer. The recommendations made by WHO is primarily used in the presentation with incorporations of the Finnish guidelines.

When writing the manuscript, one step or idea is focused on per slide. This is to avoid presenting overwhelming information, a transition of ideas is also used so there is a connection between the slides. There is use of contrasting colours on the slide to allow easy readability and special effects will be used at a minimal level to keep focus on the information presented rather than how it is being presented. The images used in the presentation are original images taken by the authors and are meant to augment rather than be the main source of information in the slides. (NCSL, 2017.)

Multiple pictures of the stages involved in the procedure is taken so the authors could select the images with best quality. An image is included in the slides that is not taken originally by the authors but is added at the suggestion of the supervising lecturer. Some short videos are also taken to considered for integration into the presentation as video may prove may informative.

4.4 Target group

The product of the project is targeted at English speaking nursing students at Satakunta University of Applied Sciences. Nursing at SAMK is taught in English and Finnish with the English course being relatively new. The degree in nursing at SAMK is aimed at preparing students for a valued profession. This project is intended to be used as an aid in class for lecturers and students.

4.5 Schedule and phases

Project have defined beginnings and end also phases. A project phase is a grouping of similar tasks and activities, the phases of a project are also sequential which means they are completed in order. (Darnall & Preston, 2016.) This project was taken out in 3 phases, the preliminary or design phase, the implementation, and the evaluation phase. The first stage involved selecting the topic creation and submission of the project plan and making the thesis contract; in total this stage took 6 months. The initial plan of the project was to make a video about the topic but after analysing the authors decided they would not be able to produce a video of a desirable quality due to lack of video equipment and required editing expertise.

The implementation phase of the project involved the authors compiling resources to be used in the theoretical background. The project product is also made in this phase. To make the product the authors got the permission of the supervisor to use the medical equipment found in the simulation classes. The final stage of the project is submitting and getting the thesis report approved while also getting evaluation and feedback on

the product from the supervisor, and lecturer in charge of the course at SAMK. Figure 1. below shows a visualization of the project timeline.

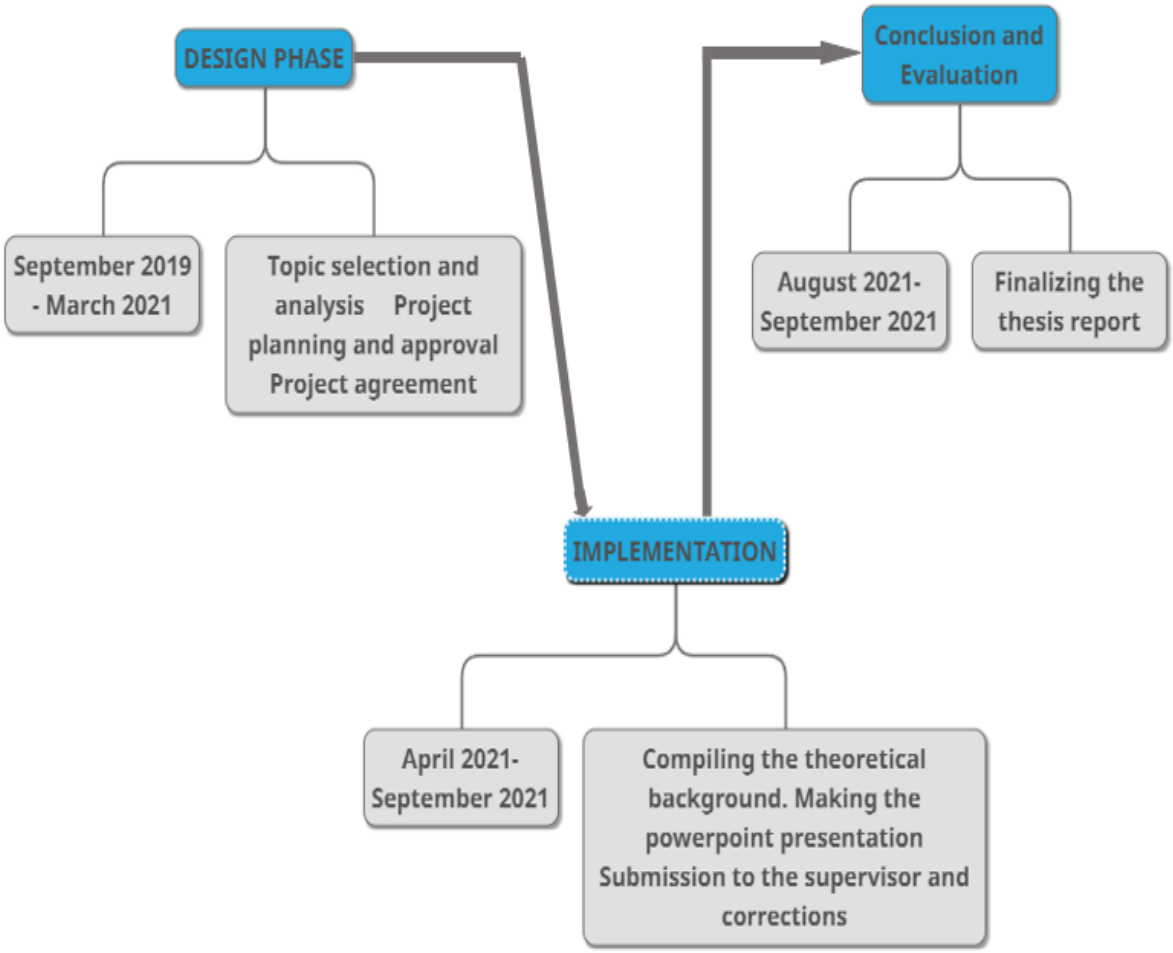


Figure 1. Project timeline

5 EVALUATION

The information provided in the thesis is based on reliable sources gathered in the theoretical background. There was no plan in the thesis to get feedback directly from the target group, the usability of the product being an educational material is evaluated by lecturers to check if it satisfies the quality expected of an educational material. The authors hope that the target group will find the material educative enough to guide them through clinical studies. There was also subscriber feedback for the product,

which is attached as Appendix 4, the feedback shows the subscriber representatives agree that the product is functional. The thesis report and overall process is evaluated by a guideline set by SAMK.

The different thesis parts were sent for evaluation as soon as they were completed by the authors. The first part sent for evaluation was the theoretical background followed by the manuscript. Once the manuscript was approved, a draft of the PowerPoint slides was made. After making the first version of the PowerPoint file, the authors shared the file with the supervisors using OneDrive, this allowed the lecturers to insert comments and recommendations. A meeting was then had where the corrections were discussed, after this meeting the authors decided it was better to take a new set of pictures and videos for the second version. The second version of the PowerPoint was better than the first version due to the changes implemented. This second version was also shared using OneDrive. This second version's layout was changed adjusted to go along with SAMK's layout. The process of producing and correcting the product was successful due to the constant interaction between the lecturers which represent the subscriber and the authors. All meetings for evaluation with lecturers were held on HILL, which is the platform used by SAMK for video consultations. Team meeting between the authors took place at the school's library and outside school area.

This project thesis increased the authors skill in seeking out evidence-based materials to support research and interpreting research data. The authors' innovation skill was also vastly improved on, this can be seen in the implementation of video into the PowerPoint slides, a move which the authors deem will be more beneficial than using pictures. The teamwork went well between the authors and workload was well divided according to strengths of the authors. The project enabled the authors to share ideas and improve each other's skills. The joint work improved the authors' abilities to cooperate and improved intercommunication and dialogue skills when different opinions arise. A third party had to be brought in when taking the pictures so one of the authors could demonstrate while the other takes the pictures and videos.

Project implementation was not according to what was approved in the project plan because the authors had failed to consider some other activities that might be running concurrently with the project such as clinical practices and the summer break which

disrupted access to the school campus and to the lecturers. The initial plan was to make a video for the topic, but this was also changed due to the realization that the authors lacked the expertise required to make the video in the quality that would be desired and making a video would incur costs. A decision was then made between the authors with the approval of the supervising lecturer to make a PowerPoint presentation, however understanding that a video would better pass across the knowledge, the authors decided to integrate short videos into the presentation in the form of auto playing gifs. The authors got a better understanding of the topic after making the project. Overall, the authors achieved the purpose of the thesis project by producing a functional educational material.

5.1 Risks

A project risk is an uncertain event that may or may not occur during a project. Risk analysis is an acknowledgement of risks that are going to happen and countermeasures. (Bridges, 2021.) The risks associated with this project were identified as the different phases were approached. The authors had planned at the design phase to brainstorm and look ahead to identify risks, but this was not enough. The first risk was time management, this project was very behind schedule due to the authors not adhering to the plan and insufficient planning. Other external issues that were totally out of the authors' control had great influence on the project like workload on the supervisor who also had to evaluate other students.

Whenever a risk was identified, the authors took a break and made sure a solution was found. In cases when the authors could not decide on what to do, they sought help from the supervisor and other students.

5.2 Ethical considerations

At the onset of this project, the authors had to complete tasks related to ethics of research which is a requirement by SAMK for all students initiating research. This task introduced the concepts of ethics and the rules guiding research to the authors.

Accordingly with the recommendation of the Finnish National Board on Research Integrity (TENK), a contract was signed at the beginning of this project after the project plan approval, this contract stated the duties and responsibilities of the authors and the institution. (TENK, 2012.)

This thesis uses existing research and the research used were appropriately cited using SAMK's latest referencing guidelines. The authors ensured there was no information falsification, misinterpretation and used new sources. Good research practices were followed according to the research integrity recommendations of the (TENK), with research integrity in this case referring to honesty and integrity that all researchers are to adopt in research (TENK, 2012).

The European commission listed some ethical issues which the authors followed to evaluate if there is any breach of ethics by this project. The ethical issues include data protection and privacy which guarantee participant data security. (European Commission, 2013.) This is not an issue relevant to this project as no personal data was collected. When preparing the presentation, an external participant was invited to be the patient and care was taken to avoid the participant's face or any identifiable features when taking the pictures. Additionally, the participant was given adequate information about the procedure and voiced their consent to fulfil the consent requirement of research ethics. The authors realise that they will take full responsibility for the published thesis report. (All European Academies, 2017.)

5.3 Reflection

The authors recommend further reading on techniques related to the topic such as proper hand hygiene technique. Additional educational materials based on this topic such as a student handbook could be beneficial to students. Instructional materials in Finnish could also be translated into English.

The product of this project while it may stand alone as an educational material on the procedure, the authors advise that it is used after having a good theoretical knowledge of the procedure. The product could also be updated as new research is done and the authors recommend that the sampling instructions are followed according to what is used in the institution where the sample is taken.

REFERENCES

Act on the law regarding the status and rights of a patient 8/17/1992/785. Retrieved 07.10.2021 from https://finlex.fi/fi/laki/ajantasa/1992/19920785#L2P6

All European Academies. (2017). The European Code of Conduct for Research Integrity (5th). European Commission.

Bailey, R. (2021). Types of Veins That Keep Your Heart Ticking. Retrieved 20.09.2021from https://www.thoughtco.com/vein-anatomy-373252

Bridges, J. (2021). Risk Analysis 101: How to Analyze Project Risk. Retrieved 15.08.2021 from https://www.projectmanager.com/training/how-to-analyze-risks-project

Buowari, O. Y. (2013). Complications of venepuncture. Advances in Bioscience and Biotechnology, 4(1), 126-128. 10.4236/abb.2013.41A018

Christensen, C. R. & Lewis, P. A. (2014). Core Curriculum for Vascular Nursing : An Official Publication of the Society for Vascular Nursing (SVN). Wolters Kluwer.

Condon, E. (2021). What causes blood sample errors? Retrieved 20.09.2021 from https://medichecks.com/blogs/news/what-causes-blood-sample-errors

Darnall, R. & Preston, J. (2016). Project Management from Simple to Complex. University of Minnesota Libraries Publishing.

Davies, H., Coventry, L. L., Jacob, A., Stoneman, L. & Jacob, E. (2020). Blood sampling through peripheral intravenous cannulas: A look at current practice in Australia. Collegian, 27(2), 219-225. 10.1016/j.colegn.2019.07.010

Dockery, G. D. (2012). Chapter 7 - Aseptic techniques. ILower Extremity Soft Tissue & Cutaneous Plastic Surgery (Second Edition) (pp. 53-68). W.B. Saunders.

Eskelinen, S. (2016). Verinäytteen otto. Retrieved 05.09.2021 from https://www.terveyskirjasto.fi/snk02013

European Commission. (2013). Ethics for researchers. Office for Official Publications of the Europ. Communities.

Fimlab. (2021). Laboratoriotutkimuksiin valmistautuminen. Retrieved 08.09.2021 https://fimlab.fi/potilasohje/laboratoriotutkimuksiin-valmistautuminen

Goodwin, M. (2021). Blood: Components, functions, groups, and disorders. Retrieved 20.09.2021from https://www.medicalnewstoday.com/articles/196001

Gould, D., Chudleigh, J., Purssell, E., Drey, N. & Hawker, C. (2020). Reply to the Letter to the Editor regarding “Survey to explore understanding of the principles of aseptic technique: qualitative content analysis with descriptive analysis of confidence and training”. American Journal of Infection Control, 48(2), 234-235. 10.1016/j.ajic.2019.10.015

Hashemi, M., Azizinezhad, M. & Farokhi, M. (2012). Power Point as an innovative tool for teaching and learning in modern classes. Procedia - Social and Behavioral Sciences, 31, 559-563. https://doi.org/10.1016/j.sbspro.2011.12.103

Herrera, K. (2020). A Step-by-Step Guide to Venipuncture. Retrieved 07.10.2021 from https://www.unitekcollege.edu/blog/stick-like-a-pro-tips-for-mastering-the-art-of-venipuncture/

Hoffman, M. (2021). Human Anatomy: Blood - Red and White Cells, Plasma, Circulation. Retrieved 15.08.2021 from https://www.webmd.com/heart/anatomy-picture-of-blood

Koskinen, M. (2015). Onko sairaanhoitajan annettava näyttö verinäytteen ottamisesta? Retrieved 09.09.2021 from https://www.tehylehti.fi/fi/tyoelama/onko-sairaanhoitajan-annettava-naytto-verinaytteen-ottamisesta

Liu, Y. T. & Geffen, D. (2020). How To Do Venous Blood Sampling - Critical Care Medicine. Retrieved 15.09.2021 from https://www.msdmanuals.com/professional/critical-care-medicine/how-to-do-peripheral-vascular-procedures/how-to-do-venous-blood-sampling?query=sample%20collection

Lippi, G., Von Meyer, A., Cadamuro, J. & Simundic, A. (2019). Blood sample quality. Diagnosis (Berlin, Germany), 6(1), 25-31. 10.1515/dx-2018-0018

NHMRC. (2019). Blood Collection -Hand Hygiene Practice Guidelines -auditing guide background. National Health and Medical Research Council.

NHS. (2013). Phlebotomy -A Guide to having a blood test Patient Information. National Health Service.

Philips, S., Collins, M. & Dougherty, L. (2011). Venepuncture and Cannulation. John Wiley & Sons, Incorporated.

Pros, R. C., Tarrida, A. C., Martin, Mª del Mar Badia & Amores, Maria del Carmen Cirera. (2013). Effects of the PowerPoint methodology on content learning. Intangible Capital, 9(1), 184-198. 10.3926/ic.370

Radigan, D. (2021). Project management with agile principles. Retrieved 20.08.2021 from https://www.atlassian.com/agile/project-management/project-management-intro

Robinson, J. (2020). What Your Blood Does for You. Retrieved 15.08.2021 from https://www.webmd.com/cancer/lymphoma/what-blood-does

Sareen, R. & Dutt, A. (2018). Role of Nursing Personnel in Laboratory Testing Implementaion of quality in medical laboratories View project Quality improvement in Laboratory View project. Annals of Nursing and Primary Care, 1(1), 1-5.

Sarode, R. (2021). Overview of Blood - Blood Disorders. Retrieved 08.09.2021 https://www.msdmanuals.com/home/blood-disorders/biology-of-blood/overview-of-blood

Satadiag. (2013). Verinäytteiden otto laboratoriotutkimuksia varten. Satasairaala.

SataDiag. (2016). Potilasohje Sairaanhoidollisten palveluiden liikelaitos Laboratorio. SataDiag.

Satakunta University of Applied Sciences. (2020). Faculties - SAMK Satakunta Unviersity of Applied Sciences. Retrieved 19.02.2021 from https://www.samk.fi/en/faculties

Schulman, J. S. & Luo, E. (2018). Venous System: Vein Anatomy and Function, Vein Types, Conditions. Retrieved 10.09.2021 from https://www.healthline.com/health/venous-system

Sepänniemi, L., Luttinen-Maunu, A., Kirsi, Pirjo, N., Kaisi, K., Holma, H., Byskata, S., Toivola, I., Rowe, T., Männistö, O., Kuopus, T., Aino, S., Kuopus, H. (2018). potilaan tunnistaminen naytteenottotilanteessa

Shaw, S. J. (2018). How to undertake venepuncture to obtain venous blood samples. Nursing Standard, 32(29)10.7748/ns.2018.e10531

Silberstein, L., Anastasi, J., Hoffman, R., Benz, E., Heslop, H., Weitz, J. (2017) Hematology (7th edition). Elsevier

lab, A., Bölenius, K., Cadamuro, J., Church, S., Cornes, M. P., Van Dongen-Lases, E. C., Eker, P., Erdeljanovic, T., Grankvist, K., Guimaraes, J. T., Hoke, R., Ibarz, M., Ivanov, H., Kovalevskaya, S., Kristensen, G. B. B., Lima-Oliveira, G., Lippi, G., von Meyer, A., Nybo, M., Vermeersch, P. (2018). Joint EFLM-COLABIOCLI Recommendation for venous blood sampling. Clinical Chemistry and Laboratory Medicine, 56(12), 2015-2038. 10.1515/cclm-2018-0602

Sue, C. (2017). Agile project management. Retrieved 25.09.2021https://www.apm.org.uk/resources/find-a-resource/agile-project-management/

Sullivan, D. (2017). How Much Blood Is in the Human Body? Retrieved 24.08.2021 from https://www.healthline.com/health/how-much-blood-in-human-body

TENK. (2012). HTK_ohje_2012. Finnish National Board on Research Integrity TENK.

Ullman, A. J., Keogh, S., Coyer, F., Long, D. A., New, K. & Rickard, C. M. (2016). 'True Blood' The Critical Care Story: An audit of blood sampling practice across three adult, paediatric and neonatal intensive care settings. Australian Critical Care, 29(2), 90-95. 10.1016/j.aucc.2015.06.002

University of Jyväskylä. (2018). Identify key concepts. Retrieved 10.10.2021 from https://koppa.jyu.fi/avoimet/kirjasto/en/library-tutorial/topic-and-search-terms/identify-key-concepts/identify-key-concepts?set_language=en&cl=en

Vaskovic, J. (2021). Major arteries, veins and nerves of the body. Retrieved 15.09.2021 from https://www.kenhub.com/en/library/anatomy/major-arteries-veins-and-nerves-of-the-body

Website of Hematology. (2020). Hematology glossary. Retrieved 19.09.2021 from https://www.hematology.org:443/education/patients/blood-basics

Website of Microsoft. (2021). What is PowerPoint Retrieved 25.08.2021 from https://support.microsoft.com/en-us/office/what-is-powerpoint-5f9cc860-d199-4d85-ad1b-4b74018acf5b

Website of National Conference of state Legislatures. (2017). Tips for Making Effective PowerPoint Presentations. Retrieved 25.08.2021 from https://www.ncsl.org/legislators-staff/legislative-staff/legislative-staff-coordinating-committee/tips-for-making-effective-powerpoint-presentations.aspx

Website of Phlebotomy. (2021). The Art of Hemolysis. Retrieved 29.9.2021 from https://www.phlebotomy.com/FREE/NKH_Art_of_Hmlysis.pdf

WHO. (2009). WHO Guidelines on Hand Hygiene in Health Care. World Health Organization.

WHO. (2010). Best practices in phlebotomy. World Health Organization.

Wilde, C., Out, D., Johnson, S. & Granger, D. A. (2013). Chapter 6.1 - Sample Collection, Including Participant Preparation and Sample Handling. The Immunoassay Handbook (Fourth Edition) (pp. 427-440). Elsevier.

Williams, M. S. (2021). What are Platelets and Why are They Important? Retrieved 19.09.2021 from https://www.hopkinsmedicine.org/health/conditions-and-diseases/what-are-platelets-and-why-are-they-important

World Health Organization. (2010). WHO guidelines on drawing blood : best practices in phlebotomy. Geneva : World Health Organization.

APPENDIX 1

Table of some literature used in this thesis.

Title, Author of research, publication year,	**The purpose of research/project/literature review**	**Target group, number of participants, data collection method, analyzing method/project method**	**Results/ product of project**
WHO guidelines on drawing blood: best practices in phlebotomy WHO 2010	To publish guidelines to improve the quality of blood specimens and the safety of phlebotomy for health workers and patients.	**Method**: Literature review **Target group**: The document is targeted at all healthcare workers	The guidelines were published and recommended for use
'True Blood' The Critical Care Story: An audit of blood sampling practice across three adult, paediatric and neonatal intensive care settings Amanda et al. 2016	To describe practice and local guidelines regarding blood sampling and conservation strategies.	**Method**: cross-sectional descriptive study **Target group**: The study is directed at healthcare institutions in the study area.	The research concluded that there were significant differences in blood sampling practices in care settings.
Role of Nursing Personnel in Laboratory Testing Rateesh Sareen, Akanksha Dutt. 2018.	To highlight the various factors affecting laboratory results some that can be controlled by training and learning while others that arise out of biological variations thus non modifiable.	**Target group**: Nurses, Phlebotomists, Consultants, Pathologist. **Method**: Qualitative research method.	An article was published in the journal “Annals of Nursing and primary care”.

Effects of the PowerPoint methodology on content learning Pros et al. 2013	The study focuses on whether the use of PowerPoint to convey information influences students	**Participants**: 205 students **Methodology:** Quantitative analysis	Results showed significant differences with the scores of the groups without PowerPoint and with PowerPoint.
Blood sample quality Lippi et al. 2018	The article is aimed at summarizing the current evidence about types of unsuitable blood samples.	**Method:** Literature review	The study concluded that the adoption of a standardized policy will help to reinforce the quality of samples

APPENDIX 2

MANUSCRIPT FOR THE POWERPOINT

SLIDE ONE

Title of the slide (How to take intravenous blood sample in Adults)

(With the name of the Authors)

SLIDE TWO

Assembly equipment.

(A picture of a prepared table/trolley with the equipment neatly laid out on the table and arrows labelling the different equipment.)

SLIDE THREE

PATIENT IDENTIFICATION AND PREPARATION

1. Introduction to the patient
2. Checking and confirming patients identity (Ask for a name and identity number, if it is an inpatient then the wrist id can be read for identification)
3. Check if the patient has conformed with the pre-sampling instruction (Fasting) (Picture of a wrist id in this slide)

SLIDE FOUR

PATIENT PREPARATION

Instruct the patient to sit in a position that is comfortable and allows for access to the site of collection.

Ask for patients previous experience in sample collection, the patients answer may help in choosing the site of selection and possibly scenarios that may happen for example fainting. (Perform hand hygiene)

Place a clean sheet under the arm to absorb the blood in case of spillage.

SLIDE FIVE

SITE SELECTION

(A picture of the veins recommended for sample collection)

The sites for collection are checked from both arms if possible.

Extend patients arms, locate a good a good sized, straight visible vein. (Instruct the patient to squeeze the hand as this helps to make the veins more visible)

Now apply torniquet 7-10cm or about 5 finger widths above the site and reassess the vein. (Insert some fingers under the torniquet to avoid skin damage)

PERFORM HAND HYGIENE AND PUT ON FITTING CLEAN GLOVES.

SLIDE SIX

SITE DISINFECTION

Disinfect with suitable disinfectant, in a smooth downward motion (picture of a suitable disinfectant) (A picture of disinfecting here)

Allow the disinfectant to dry.

Do not touch the site after cleaning.

SLIDE SEVEN

SAMPLING

Take the vacuum needle and remove the safety caps.

Anchor the vein by placing a thumb below the venepuncture site.

Enter the vein at a 30-degree angle, till there is blood in the flash chamber.

Fill the sample tubes in the right order (Picture of right order of sample tubes here) to avoid cross-contamination.

Release the torniquet after the first tube is filled.

Withdraw the needle gently and at the same time apply pressure to the site with a gauze, instruct patient to hold the gauze in place. Dispose the needle in the sharp container. (Remember to invert the sample tubes)

SLIDE SEVEN

Remove the gloves and disinfect the hands.

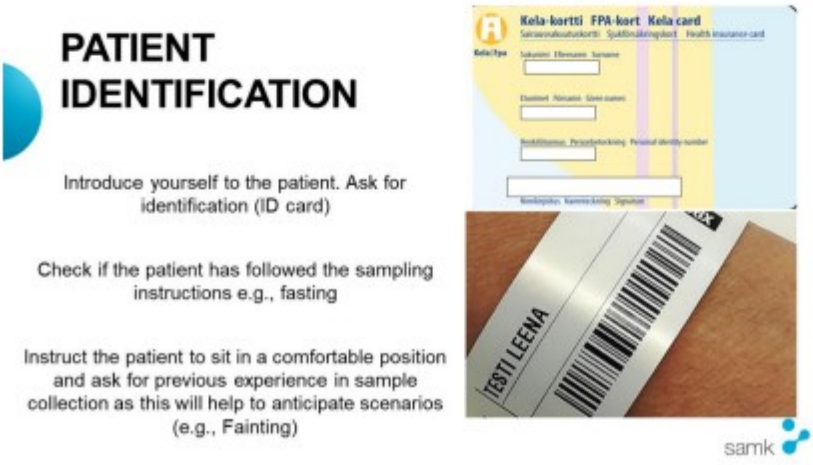
Attach the sample sticker to the tube with the patients' name, id, date, and time.

REFERENCES

Slide 1

Slide 2

Slide 3



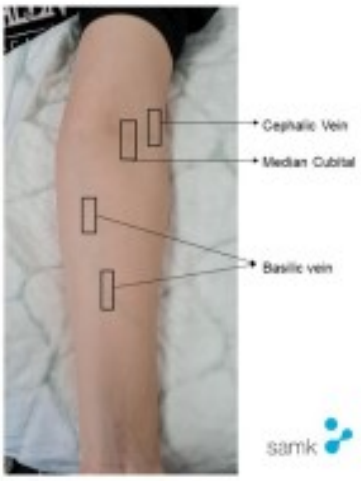
Slide 4

PATIENT PREPARATION

Perform hand hygiene. Place a support under the arm and a sheet to absorb spillage

Check the sites for collection (on both arms if possible), some sites should be avoided e.g. sites with scars or signs of trauma

Veins for collection include median cubital, cephalic, and basilic veins



samk

Slide 5

SITE SELECTION

Perform hand hygiene before touching the patient

Extend the arms and locate a good-sized vein

Apply the torniquet 7-10 cm above the site
Place some fingers under the torniquet to avoid damage to patient's skin

Palpate to select a good vein. The torniquet should not be left one for more than a minute

The patient may make a fist to enhance vein visibility

samk

Slide 6

Perform hand hygiene and wear clean gloves

Disinfect the site by swiping downwards in a smooth motion, with a suitable disinfectant

Avoid touching the site after disinfecting

samk

Slide 7

Take the vacuum safety needle and remove the cap

Anchor the vein appr 10 cm below the site

Insert the needle between 15-30 degree

Adjust the needle according to the depth and direction of the vein

Release the torniquet after the first tube fills

samk

Slide 8

Remove the needle and apply the gauze at the same time

Apply pressure to the site

Secure the gauze with a tape

samk

Slide 9

Engage the needle safety

Dispose the needle in the sharp container

samk

Slide 10

Remember to invert the tube!

Inverting allows the blood to mix with the anticoagulant or preservatives in the sample tube

samk

Slide 11

Label the samples appropriately.

Remove your gloves and disinfect your hands.

Provide adequate post-sampling instructions and advise the patient to avoid heavy lifting for about an hour to reduce risk of haemorrhage.

samk

Slide 12

BUTTERFLY NEEDLE TECHNIQUE

The butterfly needle technique follows the same principles as the vacuum holder technique

The tube holder has a short flexible tube and allows for more movement at the plastic holder

samk

Slide 13

NOTES

- The torniquet should not be left for more than a minute at a time as it can alter sample results if left for long. If it is necessary to reapply the torniquet, an interval of 2 minutes should be observed to allow for adequate blood circulation.
- Some blood samples can be taken in the same sample tube but others have to be taken separately. Find out more about the institutional rule for sample collection.
- The rate of inversion for the samples differ but about 8 times. Read instructions about the sample before collection.

Image sourced from Satadiag

samk

Slide 14

REFERENCES

- European Federation of Clinical Chemistry and Laboratory Medicine. (2017). EFLM Recommendation for venous blood sampling. https://www.eflm.eu/upload/docs/WG-PRE%20Venous%20blood%20sampling_for%20EFLM%20NSs.pdf
- Friman, T., Kuparinen, M., Lehto, L., Liikanen, E. & Kivisalmi, V. (2021). *Laboratoriotutkimusten näytteenotto* (1. painos.). Byrettikustannus avoin yhtiö.
- Liu, Y. T. & Geffen, D. (2020). How To Do Venous Blood Sampling - Critical Care Medicine. https://www.medmanuals.com/professional/critical-care-medicine/how-to-do-peripheral-vascular-procedures/how-to-do-venous-blood-sampling?query=sample%20collection
- Satadiag. (2021). näytteenotto/Toimintajärjestelmän https://hoito-ohjeet.fi/ChjepankkiSATSHP/Verin%C3%A4ytteet%20vakuumiteknikalla,%20ri%C3%A4ytteenotto/%C3%A4rjestys.pdf
- Simundic, A., Bölenius, K., Cadamuro, J., Church, S., Cornes, M. P., Van Dongen-Lases, E. C., Eker, P., Erdeljanovic, T., Grankvist, K., Guimaraes, J. T., Hoke, R., Ibarz, M., Ivanov, H., Kovalevskaya, S., Kristensen, G. B. B., Lima-Oliveira, G., Lippi, G., von Meyer, A., Nybo, M., Vermeersch, P. (2018). Joint EFLM-COLABIOCLI Recommendation for venous blood sampling. Clinical Chemistry and Laboratory Medicine, 56(12), 2015-2038. 10.1515/cclm-2018-0602
- Website of Labcorp. (2021). Introduction to specimen Collection. https://www.labcorp.com/resource/introduction-to-specimen-collection

samk

Slide 15

samk

Adeniran Clement Oni

Menghua Liang

Taking high-quality intravenous blood sample

Educational PowerPoint for International nursing student

Bachelor thesis 2021 Satakunta University of Applied Sciences

KATSE TULEVAISUUTEEN.
THINK FUTURE.

samk.fi

samk

Tilaajan palaute Satakunnan ammattikorkeakoulun hoitotyön koulutuksen opinnäytetyöstä:

Hyvä opinnäytetyön tilaaja/yhteistyökumppani

Opiskelijan opinnäytetyö on valmistunut ja pyydämme palautetta tilaamastanne opinnäytetyöstä. Palautteenne otetaan huomioon opinnäytetyön arviointilausunnossa ja arvioinnissa.

Opiskelijan nimi:

Liang Menghua ja Oni Adeniran Clement

Opinnäytetyön nimi:

Taking High-quality Intravenous Blood Samples

Valitkaa seuraavista vaihtoehdoista sopiva laittamalla rasti ko. kohtaan.

	täysin samaa mieltä	jokseenkin samaa mieltä	jokseenkin eri mieltä	täysin eri mieltä
Opinnäytetyö vastasi tarpeitamme.	X			
Opinnäytetyötä/ opinnäytetyön tuloksia voidaan hyödyntää työelämässä.	X			
Opinnäytetyö osoittaa kykyä luoviin ratkaisuihin.	X			
Opinnäytetyö osoittaa kykyä työelämän näkökulmasta uskottaviin ratkaisuihin.	X			
Opiskelija kykeni itsenäiseen ja itseohjautuvaan työskentelyyn opinnäytetyöprosessissaan.	X			
Ohjasimme opiskelijaa omalta osaltamme opinnäytetyön etenemisessä.	X			

Vapaamuotoinen palaute:

Opinnäytetyön tuotosta on tehty yhteistyössä tilaajan kanssa. Opinnäytetyöntekijät ottivat hyvin palautetta vastaan ja tekivät muutoksia saadun palautteen pohjalta. Yhteistyö tilaajan kanssa on sujunut hyvin. Kokonaisuudessaan tuotos on hyvä ja PP-dioja voidaan hyödyntää hoitotyön opiskelijoiden itseopiskelumateriaalina.

Paikka ja aika: Porissa 29.09.2021

Johanna Simon-Bellamy *Anni Riikonen*

Opinnäytetyön tilaajan /tilaajan edustajan allekirjoitus ja nimenselvennys